

Patent claims

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1. A method for allocating channels in a communications system with CDMA subscriber separation, CDMA codes forming the channels for links, in which
 - the CDMA codes which are available for allocating channels are derived from one another in accordance with a tree structure,
 - nodes which respectively join a plurality of branches for the tree structure are represented by a sequence of symbols, the sequences of symbols of two nodes differing at a position which corresponds to the distance in between the two nodes and their joining node within the tree structure,
 - a free node refers to a non-assigned CDMA code and an occupied node refers to an assigned CDMA code,
 - all the free nodes which are not directly connected, upwards or downwards in the tree structure, to a node which has already been occupied, i.e. differ from an already occupied node in at least one symbol, are selected for the allocation of a CDMA code to a link,
 - the position in the sequence of symbols at which a difference from an already occupied node occurs, and a sum of the positions for the occupied nodes, is determined for the selected nodes, in each case starting with the root of the tree structure, and
 - the channel with the CDMA code which corresponds to the node with a predefinable sum is allocated.
2. The method as claimed in claim 1, in which the tree structure is constructed in such a way that the distance between a node and the root corresponds to an increase in the spread factor (SF) of the CDMA code, and thus to a reduction in the data rate for the link.
3. The method as claimed in claim 1 or 2, in which the predefinable sum is the smallest of the sums.

4. The method as claimed in claim 2, in which the predefinable sum for a link to a data rate which does not vary very much is the greatest of the sums.

5. The method as claimed in claim 4, in which an increase possibility for a data rate of the link is defined and a node with a difference from an already occupied node at a specific position is selected, the position corresponding to the increase possibility.

10 6. The method as claimed in claim 5, in which an increase possibility for the links for the already occupied nodes is additionally taken into account in the selection of the node.

15 7. The method as claimed in claim 2, in which a plurality of channels with different CDMA codes are allocated, a desired data rate resulting from the totality of the individual data rates of the CDMA codes.

20 8. The method as claimed in one of the preceding claims, in which the symbols are digital values, and from each node a branch branches off in the direction of the root and two branches branch off in the opposite direction.

25 9. The method as claimed in claim 8, in which, starting from the root of the tree structure, the two following nodes of the outgoing branches are mapped by means of an additional "0" or "1" in the sequence of symbols, the number of bits corresponding to the sequence of symbols with the spread factor (SF).

30 10. The method as claimed in one of the preceding claims, in which the CDMA codes are orthogonal codes (OVSF) with a variable spread factor.

11. The method as claimed in one of the preceding claims, in which

the allocation of channels for the downward direction of a radio interface is carried out in a broadband radio communications system.

12. The method as claimed in one of the preceding 5 claims, in which a desired data rate and/or increase possibility for a data rate of the link is derived from an identifier of a mobile station (MS).

13. The method as claimed in one of claims 1 to 11, in which a desired data rate and/or increase 10 possibility for a data rate of the link is derived from a signaled request of a mobile station (MS).

14. A device for carrying out the method as claimed in claim 1 for a communications system with a CDMA subscriber separation,
15 having a storage device (SP) for storing the tree structure, the occupied nodes and the CDMA codes, having a processing device (BE) for selecting a non-occupied node with corresponding CDMA code and for allocating a channel with the CDMA code to a link.

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